



Integrated Flight Software Development Environment Code 582 / Alan Cudmore



Goals, Objectives, Benefits

- Provide a cFE development environment for:
 - Easy Configuration of the cFE Flight Software
 - Portability to different host systems
 - Ease of use in editing and compiling
 - Ability to run the cFE on the development host for unit testing and prototyping
 - Simple command and telemetry capability



Approach

- Leverage Open Source tools and plug-in architectures to create the integrated toolset.
- Consists of the following components:
 - cFE build environment
 - Eclipse IDE and plug-ins
 - OS Abstraction Layer



Approach (continued)

- cFE build environment
 - Consists of a directory structure and set of makefiles
 - Uses the GNU compiler tools and related GNU/Unix utilities
 - Builds on Solaris, Linux, Mac OS X, and Cygwin
 - Multiple processors and configurations handled through configuration files and directories



Approach (continued)

- Eclipse IDE
 - Eclipse IDE
 - C, C++ Development Tools
 - Custom Plug-ins for cFE Configuration
 - XML based configuration files?
 - Custom Plug-ins for basic command and telemetry capability
 - While in Eclipse, switch to the command/telemetry “View” to control the running cFE system



Approach (continued)

- OS Abstraction Layer
 - An abstraction of the Real Time OS to isolate the cFE flight software from the target OS and hardware
 - Allows the cFE to run on
 - vxWorks
 - RTEMS
 - Linux
 - Mac OS X
 - Lynx OS/Qnx (Planned)
 - Windows (Planned?)
 - Released as Open Source on GSFC's open source web site.



Results, Status, Next Steps

- Current Environment:
 - cFE build Environment with cFE prototype
 - Eclipse 3.0 & C/C++ Development tools
 - Can build on Linux, Mac OS X, Solaris
 - Can run cFE prototype on RTEMS, vxWorks, Linux, OS X
- Next Steps
 - Updates to OS API to support full cFE
 - Eclipse Plug-ins for cFE configuration
 - Eclipse Plug-ins for Commands/Telemetry
 - (Need Java/Eclipse Expertise!)
- Future Ideas?
 - Eclipse based CPU emulators to run real target software?